AI Project Report

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Dataset: To gather the dataset, we had taken the data regarding the car details that the server was sending to the client and that the client was returning and joined the data by separating them with commas and writing them to a .csv file.

We first converted the car's movement by mapping the acceleration, brake and steering onto keyboard keys. The gear was turned automatic keeping in view the RPM, current acceleration and speed of the car.

Preprocessing: After reading the data and storing it in a dataframe object, we first removed the columns which had NaN values. Afterwards, we used the unique values methods to remove any values in our target attributes which were outliers.

After this, we removed multiple columns which we did not consider to be good features for our training. Some of these were fuel, distance, damage, lap time etc etc.

Model: For the model, we have used the DecisionTreeRegressor available in the sklearn package. The reason for using a regressor is that most of our data was continuous such as accel having values of 1.1 or steer having multiple values between 0 and 1.

For a train and test splitting, we used a 30% split of test data and 70% split of train data. The reason for not using a random forest was that the server required data to be sent back to it very quickly and random forest was being too slow in its predictions.

As for the models, we had 5 target attributes, namely accel, gear, brake, clutch, steer and therefore, we made 5 models with each having being trained for each specific target attribute and stored them using the pickle package.

Client: To apply the models to our client, we first read all the files of the models and stored them in a list. Then we would tokenize the data received from the server and remove the unnecessary features and send the models and data to our driver class.

There, the models will be used to predict the 5 target attributes and send the data back to the server to drive the car accordingly.

<center>*Thank You!*</center>